AGE BASED ANALYSIS OF COVID-19 IN BIKANER (RAJ.) DURING FIRST WAVE

Nidhika* and Deepti Srivastava**

* Research Scholar **Ex Professor

Department of Zoology, Govt. Dungar College, Bikaner

ABSTRACT

COVID-19 was recognized in December 2019 in India and affected the entire population of the country. The cause of this was a novel coronavirus, which shows structural similarity to the virus that causes severe acute respiratory syndrome (SARS). The objective of this investigation is to analyse COVID-19 spread according to age by thoroughly study in Bikaner from May 2020 to January 2021. This study is based on real time data. The data were obtained from the CMHO office, Bikaner, Rajasthan. The first case of COVID-19 was reported in April 2020 in Bikaner, though we noticed a significant rise in the number of cases until October 2020. The present study reported that both the number of cases and the death rate increased gradually over time. The number of positive cases rose sharply in October 2020. The death rate also jumped in October 2020. This study covered the age dependent risk of COVID-19 and the percentage of mortality in different age groups. Available data point towards an increased risk of disease in the 17–40 age group and higher mortality in the older age group above 60 years.

Keywords: COVID-19, First wave, Mortality, Age group.

INTRODUCTION

Corona virus disease (COVID-19) is an infectious disease caused by the Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2 virus). The official names of COVID-19 and SARS-CoV-2 were issued by the WHO on February 11, 2020. This virus spreads in the form of small liquid particles when people cough, sneeze, speak, sing or breathe.

India is one of the countries experiencing excess mortality caused by COVID-19 and has more than 10.3 million confirmed cases and 1.49 lakh deceased cases of the COVID-19 pandemic disease in its first wave in the pandemic year 2020 (COVID19-India API, 2020).

The COVID-19 pandemic has had a tremendous impact on people's lives, including their personal and social behaviours. While people of all ages are affected in some way by the pandemic, older people have been far more likely to suffer the most severe health consequences (Kim & Crimmins, 2020). Since the first laboratory-confirmed case of SARS-CoV-2 in India was reported in Kerala on 30 January 2020, while in Bikaner first case was reported on 3 April 2020, patients with COVID-19 pneumonia have been presenting to hospital emergency departments with severe acute respiratory illness (SARI).

This study, conducted in Bikaner during the first wave, from 1st May 2020 to 31st January 2021, (considered the first wave of the epidemic in this region) aims to analyse the distribution of COVID-19 cases according to age and mortality for better understanding of this disease. Using age-specific mortality data, we sought to determine the relative risk of death across age categories in the Bikaner region.

OBJECTIVES

- To access the COVID-19 occurrence in Bikaner region during first wave.
- To identify risk factors of COVID-19 associated with different age group.
- To analyse the COVID-19 mortality according to age.

MATERIALS AND METHODS

The data were collected monthly from the CMHO office, Bikaner, from 1 May 2020 to 31 January 2021. In this study, we analyse the total number of confirmed cases and deaths under four age groups: 0-16 years, 17–40 years, 40-60 years and 60 years-above, to evaluate the relationship between age and COVID-19 related mortality. This data was compiled in a Microsoft Excel workbook sheet. These data were presented in the form of tables and charts and analyzed to get inferences.

RESULTS AND DISCUSSION

Patients were categorised into four different age groups to evaluate the relation between age and COVID-19 related mortality.

The results show over 27892 confirmed cases of COVID-19 and 280 deaths during that nine-month period (May,2020 to Jan, 2021). Table 1. represent the cumulative number of COVID-19 cases and COVID-19 mortality rates. During the study period, 27892 total cases were found to be positive with COVID-19. Lowest cases were found in January 2021 (46), which showed the ending of the first wave. Maximum cases were found in October 2020, which is considered the peak of first wave.

As per age wise distributions of cases majority were in the age group 17-40 years (48.80%) followed by 41-60 years (29.42%), above 60 years (15.71%) and less than 16 years (6.08%). Almost similar results were observed by Sharma et al. (2020) in Rajasthan.

The pie chart (Fig. 1) analyses the spread of COVID-19 in Bikaner to understand which age group is affected most. The majority of patients afflicted with COVID-19 belonged to the working age group of 17-40 (48.80%) which was also similar to the previously reported studies (Laxminarayan et al. and Mahajan & Kaushal, 2020). Jakhmola et al. (2021) also reported that 20-49 years of age group was most affected in India.

Mazumder et al. (2020) reported a median age of 38 years being the affected most. Similar results were also observed by Huang et al., Wang et al. and Chen et al. (2020). They calculated the median age of COVID-19 patients as 49.0 years, 56.0 years and 55.5 years, respectively.

During present study age group 0-16 is observed to be less affected, Suchman et al. (2021) also found only 1.37% of paediatric patients out of 8159. Davies et al. (2020) also noted that children under 10 years of age were affected less compared to adults.

India reported a total of 118,883 deaths from March, 2020 to November, 2020. The present study revealed the pattern of COVID-19 mortality standardised by age in Bikaner from May 2020 to January 2021. A total of 280 mortalities were reported due to COVID-19 during this duration at Bikaner (Fig. 2).

During present study the highest mortalities (65%) were recorded in the group above 60 years of age. The lowest mortality was observed in the paediatric age group below 16 years with 2 overall deaths (0.71%).

Yang et al. and Liu et al. (2020) showed that the majority of patients afflicted with COVID-19 belonged to the age group of more than 60 in Wuhan, China. Several studies have been carried out on COVID-19 and indicating elderly age contributes to a severe. Similarly, the largest increase in mortality risk was observed by Bonanad et al. (2020) in patients aged 60 to 69 years compared with 50 to 59 years. Chen et al. (2020) also found a higher risk of death in older patients than in those younger than 60. But they used large age categories (0-59, 60-79, >80). According to Cunningham et al. (2021), irrespective of gender and ethnicity, older patients appear to be at higher risk of mortality than younger patients. According to Nakamichi et al. (2021) presence of comorbid factors like hypertension, cardiovascular disease, deep venous thrombosis and chronic renal disease in older patients may have contributed to the rise of patient mortality due to COVID-19. However, in terms of viral transmission, all age groups were equally susceptible to COVID-19 infection.

CONCLUSION

In the present study, it was observed that COVID-19 disease affects all age groups. Older age is an important factor when it comes to mortality, as shown by our results. The highest mortality occurs in patients aged >60 years, in whom it was 8.2 times higher than in younger patients (17-40 years).

The present study concludes that standardized mortality rates are the need of the hour to identify vulnerable age groups for public health action. The present study access COVID-19 occurrence and mortality among the different age groups and recommend further workup and evaluation of age-standardized mortality estimates in all the districts.

ACKNOWLEDGEMENT

REFRENCES

1. Bonanad C., García-Blas S., Tarazona-Santabalbina F., Sanchis J., Bertomeu-González V., Fácila L., Ariza A., Núñez J. and Cordero A. 2020. The Effect of Age on Mortality in Patients With COVID-19: A Meta-Analysis With 611,583 Subjects. *J Am Med Dir Assoc.* 21(7):915-918.
2. Chen, C., Chen, C., Yan, J.T., Zhou, N., Zhao, J.P. and Wang, D.W. 2020. Analysis of myocardial injury in patients with COVID-19 and association between concomitant cardiovascular diseases and severity of COVID-19. *Zhonghua Xin Xue Guan Bing Za Zhi*. 48, E008.
3. Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., et al. 2020. Epidemiological and clinical characteristics of 99 cases of 2019 novel corona virus pneumonia in Wuhan, China: A descriptive study. *Lancet.* 395(10223):507-13.
4. COVID19-India API. 2020. A volunteer-driven, crowd-sourced database for COVID-19 stats & patient tracing in India. Available from: https://api.covid19india.org/.
5. Cunningham, J.W., Vaduganathan, M., Claggett, B.L., Jering, K.S., Bhatt, A.S., Rosenthal, N. and Solomon, S.D. 2021. Clinical Outcomes in Young US Adults Hospitalized With COVID-19. *JAMA Intern. Med.* 181, 379.
6. Davies, N.G., Klepac, P., Liu, Y., Prem, K., Jit, M. and Eggo, R.M. 2020. CMMID COVID-19 Working Group. Age-Dependent Effects in the Transmission and Control of COVID-19 Epidemics. *Nat. Med.* 26:1205–1211.
7. Gudbjartsson, D.F., Helgason, A., Jonsson, H., Magnusson, O.T., Melsted. P., Gudmundur, L., et al. 2020. Spread of SARS-CoV-2 in the Icelandic population. *N Engl J Med.* 382:2302-15.
8. Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y. et al. 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 395:497-506.
9. Jakhmola S., Baral B. and Jha H. C. 2021. A comparative analysis of COVID-19 outbreak on age groups and both the sexes of population from India and other countries. *J Infect Dev Ctries*. 15(3):333-341.

10. Kim, J.K. & Crimmins, E.M. 2020. How does age affect personal and social reactions to COVID-19: Results from the national Understanding America Study. *PLoS ONE,* 15(11):e0241950.
11. Laxminarayan, R., Wahl, B., Dudala, S.R. et al. 2020. Epidemiology and transmission dynamics of COVID-19 in two Indian states. *Medrxiv[Preprint]*. 20153643.
12. Liu, Y., Mao, B., Liang, S., Yang, J.W., Lu, H.W., Chai, Y.H. et al. 2020 Association between age and clinical characteristics and outcomes of COVID-19. *Eur Respir J*. 55(5):2001112.
13. Mahajan, P. & Kaushal, J.2020. Epidemic Trend of COVID-19 transmission in india during lockdown-1 phase. *J Community Health*. 23:1–10.
14. Mazumder, A., Arora, M., Bharadiya, V. et al. 2020. SARS-CoV-2 epidemic in India: epidemiological features and in silico analysis of the effect of interventions. *F1000 Research*. 9:315.
15. Nakamichi, K., Shen, J.Z., Lee, C.S., Lee, A., Roberts, E.A., Simonson, P.D., Roychoudhury, P., Andriesen, J., Randhawa, A.K., Mathias, P.C., et al. 2021. Hospitalization and Mortality Associated with SARS-CoV-2 Viral Clades in COVID-19. *Sci. Rep.* 11, 4802.
16. Sharma, R., Gupta, J., Gaur, K. L., Meena, D., Aswal, P., Sharma, K.K., Singh, R., Sharma, R., Malhotra, B. and Meena, D. 2020. COVID-19 in Rajasthan: Status and Effects of Containment Measures. *International Journal of Medicine and Public Health*. 10:202-206..
17. Suchman, K., Raphael, K. L., Liu, Y., Wee, D., Trindade, A. J., and Northwell 2021. COVID-19 Research Consortium. 2021. Acute pancreatitis in children hospitalized with COVID-19. *Pancreatology : official journal of the International Association of Pancreatology (IAP) ... [et al.]*, 21(1):31–33.
18. Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., et al. 2020. Clinical characteristics of 138 hospitalized patients with 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA*. 323(11):1061-69.
19. Yang, X., Yu, Y., Xu, J., Shu, H., Xia, J., Liu, H., et al. 2020. Clinical courseand outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. *Lancet Respir Med*. 8(5):475–81.

Table 1. Overall occurrence of COVID- 19 cases in different age group during first wave

Month	Total cases	Age group	Total infected in different age groups	Total deaths in different age groups	Occurrence of infection %	Mortality %
May 2020	81	0 - 16	6	0	7.40	0
		17 – 40	43	1	53.08	2.32
		41 – 60	20	1	24.70	5
		Above 60	12	1	14.82	8.33
June 2020	229	0 - 16	22	0	9.60	0
		17 – 40	128	1	55.89	0.78
		41 – 60	52	4	22.70	7.69
		Above 60	27	6	11.79	22.22
July 2020	1697	0 - 16	188	1	11.07	0.53
		17 – 40	914	4	53.85	0.43
		41 – 60	413	10	24.33	2.42
		Above 60	182	18	10.72	9.89
August 2020	2874	0 - 16	301	0	10.47	0
		17 – 40	1475	3	51.32	0.20
		41 – 60	787	19	27.38	2.41
		Above 60	311	22	10.82	7.07
September 2020	4645	0 - 16	291	1	6.26	0.34
		17 – 40	2467	5	53.11	0.20
		41 – 60	1300	18	27.99	1.38
		Above 60	587	45	12.63	7.66
October 2020	11267	0 - 16	573	0	5.08	0
		17 – 40	5462	4	48.47	0.07
		41 – 60	3460	13	30.70	0.37

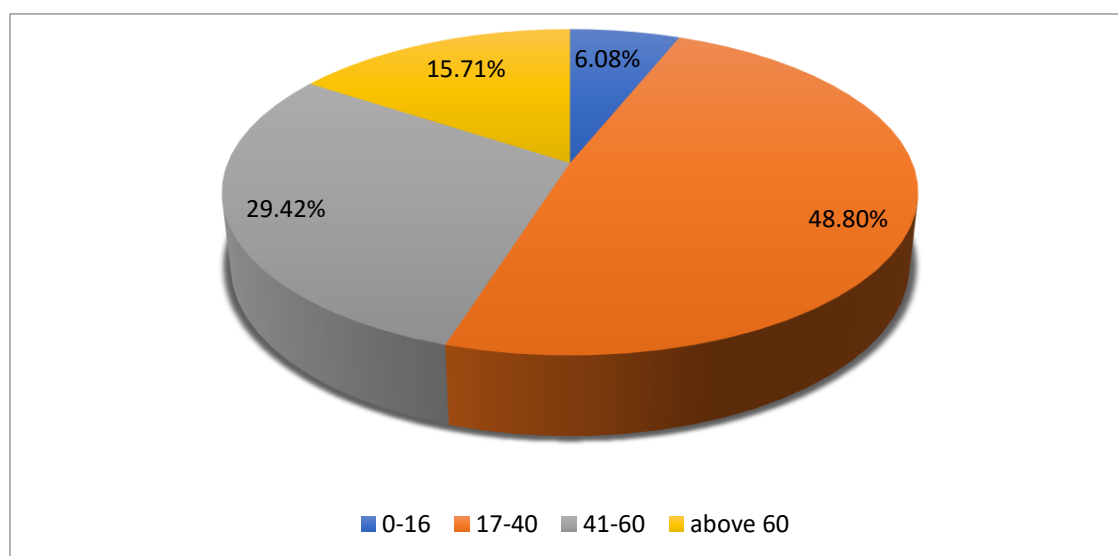|					
		Above 60	1772	38	15.72	2.14
November 2020	6529	0 - 16	295	0	4.51	0
		17 – 40	2847	3	43.60	0.10
		41 – 60	2024	9	31.00	0.44
		Above 60	1363	46	20.87	3.37
December 2020	524	0 - 16	19	0	3.62	0
		17 – 40	243	0	46.37	0
		41 – 60	142	0	27.09	0
		Above 60	120	6	20.90	5
January 2021	46	0 - 16	3	0	6.52	0
		17 – 40	26	1	56.52	0.79
		41 – 60	9	0	19.56	0
		Above 60	8	0	17.39	0
Total	27892		27892	280	100	1.00

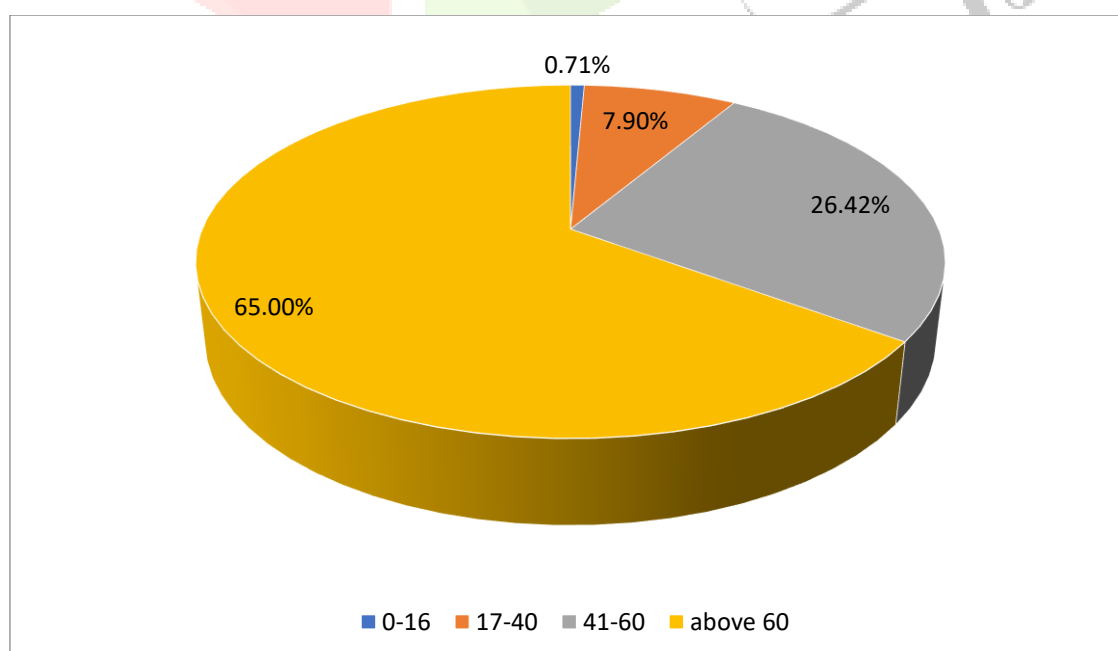Figure 1. Age wise spread of covid-19 in Bikaner during first wave.

Figure 2. Age wise mortality of covid-19 in Bikaner during first wave.